Phoenix: International Multidisciplinary Research Journal
Vol 4, No. 1, Jan-March, 2026
ISSN: 2583-689725
DOI: https://doie.org/10.10399/PIMRJ.2026526834

Artificial Intelligence and Its Impact on Retail Investor Decisions in India

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ABSTRACT

The penetration of Artificial Intelligence (AI) in the Indian financial markets, and more specifically in the banking industry, is redefining investment decisioning for retail investors. We examine the influence of AI-based tools—robo-advisors and predictive analytics—on psychological heuristics, and portfolio performance for retail participants, in this paper. The study also seeks to understand if technology can reduce prevalent behavioral biases in a market - the context being the growing AI market in India which is estimated to touch 31.94 Billion by 2031. Quantitative research instrument used in the study while descriptive and regression analysis are used to test the adoption indicators and results based on sample of 100 active retail investors.

"Rational circuit breakers" The research suggests that the AI tools act as powerful "rational circuit breakers", putting a check on panic-inducing selling and herd behaviour by offering data-driven "second opinions". Empirical findings reveal a statistically significant positive relationship between using AI tool and perceived portfolio returns (R = 0.74, R2 = 0.55), which suggests that investors are more satisfied with automating risk management and rebalancing. But the research also uncovers a significant "trust gap" with 48% of those surveyed ranking the "black-box" nature of algorithms as one of their primary obstacles to implementation. Also, if AI abolishes loss aversion under UILCHF then this could incidentally raise overconfidence and increase trading activity or "algorithmic over-reliance". The conclusion highlights the need for a shift towards Explainable AI (XAI) to ensure transparency and generate long-term trust with Indian investors. By blending behavioral finance theory and technology adoption models, this study offers pragmatic recommendations for fintech developers and policy makers in their endeavor to build a more efficient, rational and inclusive investment landscape in India.

Keywords: Robo-Advisory, Behavioural Biases, Explainable AI (XAI), Rational Brake System Circuits in the form of circuit breakers, Fintech Adoption

INTRODUCTION

There is a transformational phase that the Indian financial ecosystem is experiencing - Digital economies, demographic favorable shift and pervasive AIerization. In the past, the stock market in India was often seen as a black box where only institutional giants and high-net-worth individuals who had access to calculations and analysis could play. However, the democratisation of the equity market has resulted in a significant increase in retail investor participation—largely led by the increase in low-cost brokerage platforms and expansion of India‘s digital public infrastructure. Indian AI enabled market growing The Indian AI market reached 6.05 billion in 2024 and is projected to reach 31.94 billion by 2031, mirroring country-wide aspirations of infrastructural integration into the socio-economic domain.

Performance of Indian retail investors, a matter of grave concernEven with the rush of participation, that is still too large an issue to be so eagerly overlooked. Empirically, a majority of them lacks an ability to beat the benchmark indices like Nifty 50 owing to

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irrational decision making based on psychological heuristics such as fear, greed and herd mindset. These behavorial biases result in damaging actions such as panic selling in market corrections and bubbly like euphoria during bull markets. That‘s where AI can really act as a ‗rational circuit breaker‘ - providing tools like automatic rebalancing and risk alerts to help investors stick with their strategy in the face of short-term noise.

In Indian retail investment, AI is defined as ML, NLP and predictive analytics. These tools give retail traders features that have previously been the province of institutional desks, like real-time interpretation of market sentiment from financial news and automated analysis of large quantities of data to spot subtle turns in markets. Additionally, with the advent of ―Robo-advisors‖, or automated portfolio management platforms that provide financial advice from relatively little human involvement, complex portfolio management has been democratized to a broader audience at a fraction of historical cost.

The importance of this study emanates from the fact that India has a very distinct socio-economic scenario. With more than 6 million directly employed in the tech and AI workforce, and a government-supported ―IndiaAI Mission‖ having been accorded ₹10,353 crore to be spent over a period of five years; India is fast emerging as an international AI hub. Admittedly, the use of AI-generated investment tools is not just a technical issue but a psychological and regulatory one. Trust, black box nature of the AI algorithms and different levels of digital financial literacy among Tier-I and Tier-II cities will also be factors that can decide the outcome of how good or bad AI has been in shaping up investor behavior.

The aim of this study is to examine the impact of AI on various aspects inherent to the decision-making behaviors of Indian retail investors. It then goes on to consider the interaction between technology and behavioral psychology to understand when and how AI tools help overcome cognitive biases of investors, and what obstacles the industry needs to address in order for these technologies to be more widely adopted. The snapshot of India‘s next generation of retail investors that emerges is placed in the context of a synthesis using advanced computational models together with theory from behavioural finance.

REVIEW OF LITERATURE

The academic literature on AI in financial markets has transitioned, from an early emphasis on high-frequency institutional trading to the analysis of retail investor empowerment and behavioral intervention. The literature implies AI is not just a one-off transition but a trans-layer shift in information structure, decision-making peculiarities and investor psychology.

The Evolution of Technology from Screeners To Robo-Advisors

The first layer of the AI effect is the democratization of information. Conventional statistical models are unable to capture the non-linear dynamics of such complex and volatile patterns in Indian markets that often tend to be cross-linked with global signals, macroeconomic changes as well as retail crowd sentiment. Recent studies have shown that the advanced AI methods, especially LSTM networks and hybrid models, have outperformed in predicting stock market prices as compared to classical econometric methods. In Indian markets, these models are progressively fine-tuned on Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) data which include local market conditions and regulatory announcements.

The rise of Robo-advisors is another step up in technology utilisation though. The services

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are simply digital portfolio managers, with the advice and execution provided automatically by quantitative algorithms, and now they have growing appeal to retail investors who can't afford traditional wealth management. In India, even millenials and tech-savvy investors in cities such as Bengaluru or Chennai have shown more inclination towards getting these tools for the convenience that they offer and ease of use besides, saving on human-advisory fees.

6.Behavioral finance is married to AI as de-biasing tool

A common theme in the recent literature is how AI can be harnessed to combat biases. According to behavioral finance, investors are not rational but instead susceptible to cognitive illusions like loss aversion—our psychological tendency to feel losing a dollar is twice as bad as the joy of finding one. AI-powered trading solutions have proven to combat loss aversion by motivating traders to make better calculated risks based on data rather than making buying or selling decisions emotionally during a market dip.

But the research suggests there may be a ―re-sculpting‖ of biases, too. While AI might dampen fear-driven selling, it could also magnify overconfidence and anchoring biases inadvertently. For example, investors might feel a sense of early success with AI tools that could lead to an "illusion of control" effect and cause individuals to stop paying attention to machine recommendations and return to emotionally driven trading when the market changes. This is where a ―Human + Machine‖ hybrid approach becomes essential – AI will serve as the analytical foundation and humans will provide the cognitive oversight.

Adoption Theoretical Backgrounds: TAM VE UTAUT

In order to explore why some investors adopt AI and others do not, the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) are often used. Remember, according to TAM the primary drivers of technology adoption are "Perceived Usefulness" (our conviction that using an AI model will make us perform better) and "Perceived Ease of Use." In India, _Subjective Norms‘ (Peer Pressure Social Identification) appear as significant predictors since retail investors generally tend to reference social trends and peer success experiences before adopting new financial technologies.

UTAUT extends the model by adding "Facilitating Conditions" and "Social Influence." Research related to the fintech ecosystem in Bengaluru, shows that although these international models offer inspiration, they need adaptation but with a certain amount of customization so addressing trust-building and regional language support which are critical at an Indian context.

The Black Box Dilemma and Advent of XAI

One persistent sentiment found in the literature is that of ―Algorithm Aversion‖—resistance to following machine-provided advice, especially after observing an algorithm make a mistake. This attitude is associated to the perceived credibility of the instrument. It is found that the average retail investor would generally rate an AI forecast as less credible than a human's unless it is "Explainable".

Explainable AI (XAI) is being proposed as an answer to this trust deficit. ―Perceived explainability‖ have a statistically significant impact on investors trust and confidence in the Indian market. When a system tells someone why they‘re being recommended something, the chance that said entity will take that recommendation goes up quite a bit. This is even more pertinent in Tier-II cities where original technology readiness level of investments could be low and perceived risk can be higher.

Regulatory and Ethical Considerations

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Indian securities market has witnessed significant proliferation of AI with its wide acceptance in the world and also has seen a response from regulators such as SEBI. Shira A. Scheindlin,200 whose name is often associated with securities law best practices in the area of HFT, squarely warned that both courts and regulators need to offer ―more texture,‖ not just when it comes to fair markets and data privacy but also the potential for risks like "AI-washing." SEBI‘s use internal AI ―Data Lakes‖ to discover insider trading activity and anomalies indicates a move towards more technology-based regulatory methods.

RESEARCH METHODOLOGY

Design This research uses a descriptive and quantitative methodology to study the effect of Artificial Intelligence over decision-making preferences of Indian retail investors. The method involved is intended to grasp the experiences, perceptions and changes in behavior of current market participants.

Research Design

We position the study as exploratory, hoping to discover what may be the (spurious) correlations between AI tool usage and investor outcomes such as portfolio return and bias reduction. A questionnaire based influencing tool was used for the survey. This design enables systematic collection of quantifiable data for a variety of technology-acceptance and behavioral-finance-related variables.

Sampling and Sample Size

Scope of the study will be limited to retail investors from India who are active in equity trading. Considering the particularity of our research topic, we utilize purposive sampling.

This also made sure that participants had the necessary awareness of AI tools or were potential users of such apps (walking into this with some idea instead of zero–I.e., robo-advisors or AIscreeners).

The sample used for the study was 100 respondents. While studies at scale have been made in certain geographies like Delhi-NCR (400) or Karnataka (200), a dataset consisting of 100 users lends itself to investigating the fundamental dynamics surrounding adoptance amongst tech-savvy cohorts. Respondents were drawn from a combination of Tier-I and Tier-II cities to ensure diversity in the overall geographical location and extent of digital literacy across India.

Data Collection Instrument

The main data was obtained through a structured electronic questionnaire composed of two sections:

Demographic and baseline data: Age, income and years of trading experience.

Perception and Behavior Metric : 5 point Likert scales for trust levels, perceived usefulness, and frequency of individual behavioral biases

Questions were derived from the theoretical bases of the Technology Acceptance Model (TAM) as well as Prospect Theory developed by Kahneman and Tversky.

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Data Analysis Tools

Data collected was analyzed descriptively and inferential statistics was used. A descriptive analysis (frequencies, percentages, averages) was used to describe the sample and explore general patterns of utilization of AI tools. To test the associations between AI usage and investors‘ confidence, or their portfolio performance, we used inferential analysis, such as correlation, and simple linear regression models. The analysis was performed with the objective of determining what the gains and continuing impediments for AI‘s adoption were.

DATA ANALYSIS AND INTERPRETATION

The findings from the responses of 100 retail Indian investors portray a nuanced picture of an evolving market. This analysis below delves into demographic insights, levels of awareness and the perceived psychological impact of AI tools.

Table 1: Demographic Profile of 100 Respondents

Category	Classification	Frequency	Percentage (%)
Age	18–30	45	45%
	31–45	35	35%
	46–60	15	15%
	60+	5	5%
Annual Income	Below ₹5 Lakhs	20	20%
	₹5 Lakhs – ₹15 Lakhs	55	55%
	Above ₹15 Lakhs	25	25%
Experience	< 2 Years	30	30%
	2–5 Years	40	40%
	> 5 Years	30	30%

Interpretation: 80% of the population below age 45 shows that the ―AI shift‖ is significantly influenced by millennials with Gen-Z closely following them. This tends to be a more Algorithm Appreciated generation (77%) due to much better digital literacy and experience in interacting with automated interfaces. The fact that a majority (55%) of respondents belonged to the ₹5–₹15 Lakhs income segment hints at how these AI tools are successfully making professional financial advice accessible to the Indian middle-income families.

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2. Awareness and Adoption Rates

Awareness of AI in finance is high, but actual usage varies significantly across different categories of tools.

Table 2: Awareness vs. Regular Usage of AI Tools (N=100)

Tool Type	Awareness (%)	Regular Usage (%)	Gap (%)
Robo-Advisors (e.g., INDmoney)	85%	30%	55%
AI-Powered Screeners (e.g., Trendlyne)	70%	40%	30%
Sentiment Analysis Tools	45%	15%	30%
Automated Portfolio Rebalancing	78%	35%	43%
Algorithmic Trading Bots	25%	5%	20%

Interpretation: The gap between awareness and usage is most pronounced in robo-advisors (55%). This suggests that while investors know about these tools, there is a "trust threshold" or a "transaction cost" (psychological or financial) that prevents full adoption. AI-powered screeners have the highest conversion rate (40% usage), likely because they function as a "digital copilot," assisting rather than replacing the investor's decision-making process.

3. Impact on Behavioral Biases

One of the primary goals of the study was to measure how AI intervention affects common behavioral biases. Respondents rated their agreement with statements regarding their trading habits before and after using AI tools.

Table 3: Perceived Mitigation of Behavioral Biases (Mean Score on 5-Point Likert Scale)

Behavioral Bias	Before AI Tool Usage (Mean)	After AI Tool Usage (Mean)	Change
Panic Selling (Loss Aversion)	4.15	3.20	-0.95
Herd Mentality (Social Bias)	3.85	3.10	-0.75
Overtrading (Overconfidence)	3.50	3.65	+0.15
Anchoring Bias (Focus on past price)	4.05	3.40	-0.65

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Interpretation: The data shows a significant reduction in panic selling (-0.95) and herd mentality (-0.75). This confirms the role of AI as a "rational circuit breaker" that encourages a data-driven approach during market volatility. However, a slight increase in overtrading (+0.15) suggests that AI tools might inadvertently fuel overconfidence in some users, leading them to trade more frequently because they feel protected by the algorithm.

4. Regression Analysis: AI Usage and Portfolio Performance

To quantify the relationship between the intensity of AI usage (X) and perceived portfolio performance (Y), a simple linear regression was performed. The usage intensity was measured as a composite score of tool frequency and variety.

Model Summary

- R = 0.74
- R^2 = 0.55 (The model explains 55% of the variance in performance satisfaction).
- F = 119.5, p < 0.001.

Interpretation: The positive correlation (R=0.74) and the R^2 of 0.55 indicate a strong relationship between the adoption of AI tools and improved perception of portfolio performance. This suggests that for every unit increase in AI engagement, there is a commensurate improvement in how investors perceive their risk-adjusted returns and diversification.

5. Barriers to Adoption

Despite the positive performance metrics, significant barriers remain that prevent the other 65% of the market from fully embracing AI.

Table 4: Primary Barriers to AI Adoption (Ranked by Frequency of Mention)

Barrier	**Frequency**	**Rank**
Lack of Transparency (Black Box Concern)	48	1
Data Privacy and Security Concerns	32	2
Complexity of the Tool/Interface	28	3
Preference for Human Interaction	25	4
Fear of Technological Glitches	18	5

Interpretation: The barrier of ―Black Box‖ concern is the most prevalent (48%). This is consistent with studies on ―Algorithm Aversion‖ meaning that people have a natural tendency to distrust anything they don‘t understand. Data privacy is also a significant issue

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(32%), reflecting the wider national debate in India across digital data security.

FINDINGS

Our data analysis and literature review have important implications for the use of AI by Indian retail investors.

AI as a Psychologically Shield from the Volatilities of Market

The big takeaway here: How AI takes the fear out of the ―fear-greed‖ cycle. Except for some general risk alerting and a few other rebalancing functions that are performed automatically, AI tools largely keep many investors from panic selling in times of market duress. The company determined that panic selling scores among users dropped from 4.15 to 3.20, suggesting the data-driven "second opinion" allows investors to stick with long-term plans.

The "Trust Gap" and the Mandate for Explainability

The lack of transparency is a major obstacle to the widespread adoption of AI. The 'Black Box' nature of algorithms concerned almost half (48%) of all respondents. This corroborates the observation in literature that AI to become mainstream should develop into Explainable AI (XAI). There is a much higher level of trust and usage by investors in India for platforms that offer clear, visual or textual reasons for why they are recommending something.

Democratization and Improved Portfolio Discipline

Sophisticated investment management has been democratized by AI tools. High street investors with average income are already employing AI in portfolio diversification on a scale that used to exist only in the level of institutional portfolios. The research concluded that 40% of its users frequently use AI screens to pick undervalued companies in diverse sectors –thus eliminating the usual home bias and sector concentration present among Indian retail investors.

The Risk of "Algorithmic Overconfidence"

Even as AI whittles down fears of bias, it could be seeding over-confidence. The minor increment in overtrading scores (+0.15) indicates that some investors experience a "false sense of security" while using AI tools—they trust that the algorithm will always take care of them. The conclusion emphasises the importance of investor education not about benefits but about limits and risks to AI.

Demographic and Geographic Differences in Adoption

Adoption is not the same in states of India. This is primarily being led by the tech-savvy millennials in Tier-I cities. But Tier-II cities are the next growth frontier, as long as trust, regional languages (on which Google is working) and user-interface ease-of-use issues are solved. The hybrid model of ―Human + Machine‖ is likely to be popular in this country — the insights come from AI, but it‘s reassuring to know that there is a human (real or at least a very human-like chatbot) on the other end.

CONCLUSION

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Introduction of Artificial Intelligence into retail trading in India a significant step away from intuitive-led trading to data-driven, systematic strategies. This research has shown that the AI/technology based technology are provided for more than simply as analytical outputs, but as tools aligning with and acting as non-traditional behavioral stabilizer to assist retail investors in overriding deeply held psychological bias of loss aversion and herd behavior. By making professional-quality research and automated portfolio management available to the masses, AI is democratizing access and leveling the playing field so that participants can build more resilient and diversified portfolios on their own.

But the road to AI being truly adopted through India is ‗not so easy'. That's the reason, why the "Black Box" problem is still the greatest psychological barrier and that predictive success alone does not persuade investors. The future of the business will be in "Explainable AI" that emphasizes transparency and educating the users on the platform. What's more, the risk that AI will inadvertently magnify biases, such as overconfidence, indicates that these tools should be viewed as a supplement to - not substitute for - financial literacy and human judgment.‖

Regulatory-wise, the results imply that regulators such as SEBI should take a proactive role in setting transparency-compliance standards and helping investors protect themselves from the "AI-washing." With India's AI market growing rapidly, the priority should be to create a collaborative ecosystem which fosters both tech innovation and consumer safety. In the end, the difference that AI will make to retail investor decision making in India will depend on how well these algorithms can be harmonized with human investing—making the market a more logical, efficient and democratic space for all.

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